

Chemical mechanical polishing device with end point detection functions

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Abstract

The present invention provides a method for detecting the end point in a chemical mechanical polishing (CMP) process, which uses a multi-frequency-band light as an interference light source capable of expanding the detection range of the polishing thickness. In a CMP process, a multi-frequency-band light source emits lights with several wavelength. Each light with a different wavelength is reflected once on the upper and lower surfaces of the polishing layer. The interference phenomena formed by the reflected light is received by a detector. The intensity of the signals received by the detector is the accumulated sum of individual interference signals. Its period is the least common multiple of the period of all individual interference signals. A predetermined theoretical calculation or an experimental method is used to obtain the relationship data of the total interference intensity relative to the film thickness. This relationship data is used as a reference value to determine the time to terminate a CMP process.

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